SEQUENCE LISTING

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<120> Tertiary Structure of Peanut Allergen ARA H 1

<130> HS 110

<140> 09/267,719
<141> 1999-03-11

<150> 60/077,763
<151> 1998-03-13

<160> 13

<170> PatentIn Ver. 2.1

C1

<210> 1
<211> 626
<212> PRT
<213> Arachis hypogaea

<400> 1

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Met Arg Gly Arg Val Ser Pro Leu Met Leu Leu Leu Gly Ile Leu Val
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Leu Ala Ser Val Ser Ala Thr His Ala Lys Ser Ser Pro Tyr Gln Lys
             20                  25                  30

Lys Thr Glu Asn Pro Cys Ala Gln Arg Cys Leu Gln Ser Cys Gln Gln
         35                  40                  45

Glu Pro Asp Asp Leu Lys Gln Lys Ala Cys Glu Ser Arg Cys Thr Lys
     50                  55                  60

Leu Glu Tyr Asp Pro Arg Leu Val Tyr Asp Pro Arg Gly His Thr Gly
 65                  70                  75                  80
```

Thr Thr Asn Gln Arg Ser Pro Pro Gly Glu Arg Thr Arg Gly Arg Gln
85 90 95

Pro Gly Asp Tyr Asp Asp Asp Arg Arg Gln Pro Arg Arg Glu Glu Gly
100 105 110

Gly Arg Trp Gly Pro Ala Gly Pro Arg Glu Arg Glu Arg Glu Glu Asp
115 120 125

Trp Arg Gln Pro Arg Glu Asp Trp Arg Arg Pro Ser His Gln Gln Pro
130 135 140

Arg Lys Ile Arg Pro Glu Gly Arg Glu Gly Glu Gln Glu Trp Gly Thr
145 150 155 160

Pro Gly Ser His Val Arg Glu Glu Thr Ser Arg Asn Asn Pro Phe Tyr
165 170 175

Phe Pro Ser Arg Arg Phe Ser Thr Arg Tyr Gly Asn Gln Asn Gly Arg
180 185 190

Ile Arg Val Leu Gln Arg Phe Asp Gln Arg Ser Arg Gln Phe Gln Asn
195 200 205

Leu Gln Asn His Arg Ile Val Gln Ile Glu Ala Lys Pro Asn Thr Leu
210 215 220

Val Leu Pro Lys His Ala Asp Ala Asp Asn Ile Leu Val Ile Gln Gln
225 230 235 240

Gly Gln Ala Thr Val Thr Val Ala Asn Gly Asn Asn Arg Lys Ser Phe
245 250 255

Asn Leu Asp Glu Gly His Ala Leu Arg Ile Pro Ser Gly Phe Ile Ser
260 265 270

Tyr Ile Leu Asn Arg His Asp Asn Gln Asn Leu Arg Val Ala Lys Ile
275 280 285

Ser Met Pro Val Asn Thr Pro Gly Gln Phe Glu Asp Phe Phe Pro Ala
290 295 300

Ser Ser Arg Asp Gln Ser Ser Tyr Leu Gln Gly Phe Ser Arg Asn Thr
305 310 315 320

Leu Glu Ala Ala Phe Asn Ala Glu Phe Asn Glu Ile Arg Arg Val Leu
325 330 335

Leu Glu Glu Asn Ala Gly Gly Glu Gln Glu Glu Arg Gly Gln Arg Arg
340 345 350

Trp Ser Thr Arg Ser Ser Glu Asn Asn Glu Gly Val Ile Val Lys Val
355 360 365

Ser Lys Glu His Val Glu Glu Leu Thr Lys His Ala Lys Ser Val Ser
370 375 380

Lys Lys Gly Ser Glu Glu Glu Gly Asp Ile Thr Asn Pro Ile Asn Leu
385 390 395 400

Arg Glu Gly Glu Pro Asp Leu Ser Asn Asn Phe Gly Lys Leu Phe Glu
405 410 415

Val Lys Pro Asp Lys Lys Asn Pro Gln Leu Gln Asp Leu Asp Met Met
420 425 430

Leu Thr Cys Val Glu Ile Lys Glu Gly Ala Leu Met Leu Pro His Phe
435 440 445

Asn Ser Lys Ala Met Val Ile Val Val Val Asn Lys Gly Thr Gly Asn
450 455 460

Leu Glu Leu Val Ala Val Arg Lys Glu Gln Gln Gln Arg Gly Arg Arg
465 470 475 480

Glu Glu Glu Glu Asp Glu Asp Glu Glu Glu Glu Gly Ser Asn Arg Glu
485 490 495

Val Arg Arg Tyr Thr Ala Arg Leu Lys Glu Gly Asp Val Phe Ile Met
500 505 510

Pro Ala Ala His Pro Val Ala Ile Asn Ala Ser Ser Glu Leu His Leu
515 520 525

Leu Gly Phe Gly Ile Asn Ala Glu Asn Asn His Arg Ile Phe Leu Ala
530 535 540

Gly Asp Lys Asp Asn Val Ile Asp Gln Ile Glu Lys Gln Ala Lys Asp
545 550 555 560

Leu Ala Phe Pro Gly Ser Gly Glu Gln Val Glu Lys Leu Ile Lys Asn
565 570 575

Gln Lys Glu Ser His Phe Val Ser Ala Arg Pro Gln Ser Gln Ser Gln
580 585 590

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Ser Pro Ser Ser Pro Glu Lys Glu Ser Pro Glu Lys Glu Asp Gln Glu
        595                 600                 605

Glu Glu Asn Gln Gly Gly Lys Gly Pro Leu Leu Ser Ile Leu Lys Ala
    610                 615                 620

Phe Asn
625
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<210> 2
<211> 371
<212> PRT
<213> Phaseolus vulgaris

<400> 2

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Asp Asn Pro Phe Tyr Phe Asn Ser Asp Asn Ser Trp Asn Thr Leu Phe
  1               5                  10                  15

Lys Asn Gln Tyr Gly His Ile Arg Val Leu Gln Arg Phe Asp Gln Gln
             20                  25                  30

Ser Lys Arg Leu Gln Asn Leu Glu Asp Tyr Arg Leu Val Glu Phe Arg
         35                  40                  45

Ser Lys Pro Glu Thr Leu Leu Leu Pro Gln Gln Ala Asp Ala Glu Leu
     50                  55                  60

Leu Leu Val Val Arg Ser Gly Ser Ala Ile Leu Val Leu Val Lys Pro
 65                  70                  75                  80

Asp Asp Arg Arg Glu Tyr Phe Phe Leu Thr Ser Asp Asn Pro Ile Phe
                 85                  90                  95

Ser Asp His Gln Lys Ile Pro Ala Gly Thr Ile Phe Tyr Leu Val Asn
            100                 105                 110

Pro Asp Pro Lys Glu Asp Leu Arg Ile Ile Gln Leu Ala Met Pro Val
        115                 120                 125

Asn Asn Pro Gln Ile His Glu Phe Phe Leu Ser Ser Thr Glu Ala Gln
    130                 135                 140

Gln Ser Tyr Leu Gln Glu Phe Ser Lys His Ile Leu Glu Ala Ser Phe
145                 150                 155                 160

Asn Ser Lys Phe Glu Glu Ile Asn Arg Val Leu Phe Glu Glu Glu Gly
                165                 170                 175
```

Gln Gln Glu Gly Val Ile Val Asn Ile Asp Ser Glu Gln Ile Lys Glu
180 185 190

Leu Ser Lys His Ala Lys Ser Ser Ser Arg Lys Ser Leu Ser Lys Gln
195 200 205

Asp Asn Thr Ile Gly Asn Glu Phe Gly Asn Leu Thr Glu Arg Thr Asp
210 215 220

Asn Ser Leu Asn Val Leu Ile Ser Ser Ile Glu Met Glu Glu Gly Ala
225 230 235 240

Leu Phe Val Pro His Tyr Tyr Ser Lys Ala Ile Val Ile Leu Val Val
245 250 255

Asn Glu Gly Glu Ala His Val Glu Leu Val Gly Pro Lys Gly Asn Lys
260 265 270

Glu Thr Leu Glu Tyr Glu Ser Tyr Arg Ala Glu Leu Ser Lys Asp Asp
275 280 285

Val Phe Val Ile Pro Ala Ala Tyr Pro Val Ala Ile Lys Ala Thr Ser
290 295 300

Asn Val Asn Phe Thr Gly Phe Gly Ile Asn Ala Asn Asn Asn Asn Arg
305 310 315 320

Asn Leu Leu Ala Gly Lys Thr Asp Asn Val Ile Ser Ser Ile Gly Arg
325 330 335

Ala Leu Asp Gly Lys Asp Val Leu Gly Leu Thr Phe Ser Gly Ser Gly
340 345 350

Asp Glu Val Met Lys Leu Ile Asn Lys Gln Ser Gly Ser Tyr Phe Val
355 360 365

Asp Ala His
370

<210> 3
<211> 510
<212> PRT
<213> Arachis hypogaea

<400> 3
Ile Ser Phe Arg Gln Gln Pro Glu Glu Asn Ala Cys Gln Phe Gln Arg

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  1               5                  10                  15

Leu Asn Ala Gln Arg Pro Asp Asn Arg Ile Glu Ser Glu Gly Gly Tyr
            20                  25                  30

Ile Glu Thr Trp Asn Pro Asn Asn Gln Glu Phe Glu Cys Ala Gly Val
        35                  40                  45

Ala Leu Ser Arg Leu Val Leu Arg Arg Asn Ala Leu Arg Arg Pro Phe
    50                  55                  60

Tyr Ser Asn Ala Pro Gln Glu Ile Phe Ile Gln Gln Gly Arg Gly Tyr
65                  70                  75                  80

Phe Gly Leu Ile Phe Pro Gly Cys Pro Arg His Tyr Glu Glu Pro His
                85                  90                  95

Thr Gln Gly Arg Arg Ser Gln Ser Gln Arg Pro Pro Arg Arg Leu Gln
            100                 105                 110

Gly Glu Asp Gln Ser Gln Gln Gln Arg Asp Ser His Gln Lys Val His
        115                 120                 125

Arg Phe Asp Glu Gly Asp Leu Ile Ala Val Pro Thr Gly Val Ala Phe
    130                 135                 140

Trp Leu Tyr Asn Asp His Asp Thr Asp Val Val Ala Val Ser Leu Thr
145                 150                 155                 160

Asp Thr Asn Asn Asn Asp Asn Gln Leu Asp Gln Phe Pro Arg Arg Phe
                165                 170                 175

Asn Leu Ala Gly Asn Thr Glu Gln Glu Phe Leu Arg Tyr Gln Gln Gln
            180                 185                 190

Ser Arg Gln Ser Arg Arg Arg Ser Leu Pro Tyr Ser Pro Tyr Ser Pro
        195                 200                 205

Gln Ser Gln Pro Arg Gln Glu Glu Arg Glu Phe Ser Pro Arg Gly Gln
    210                 215                 220

His Ser Arg Arg Glu Arg Ala Gly Gln Glu Glu Glu Asn Glu Gly Gly
225                 230                 235                 240

Asn Ile Phe Ser Gly Phe Thr Pro Glu Phe Leu Glu Gln Ala Phe Gln
                245                 250                 255

Val Asp Asp Arg Gln Ile Val Gln Asn Leu Arg Gly Glu Thr Glu Ser
```

```
            260                 265                 270

Glu Glu Glu Gly Ala Ile Val Thr Val Arg Gly Gly Leu Arg Ile Leu
        275                 280                 285

Ser Pro Asp Arg Lys Arg Arg Ala Asp Glu Glu Glu Glu Tyr Asp Glu
    290                 295                 300

Asp Glu Tyr Glu Tyr Asp Glu Glu Asp Arg Arg Arg Gly Arg Gly Ser
305                 310                 315                 320

Arg Gly Arg Gly Asn Gly Ile Glu Glu Thr Ile Cys Thr Ala Ser Ala
                325                 330                 335

Lys Lys Asn Ile Gly Arg Asn Arg Ser Pro Asp Ile Tyr Asn Pro Gln
            340                 345                 350

Ala Gly Ser Leu Lys Thr Ala Asn Asp Leu Asn Leu Leu Ile Leu Arg
        355                 360                 365

Trp Leu Gly Leu Ser Ala Glu Tyr Gly Asn Leu Tyr Arg Asn Ala Leu
    370                 375                 380

Phe Val Ala His Tyr Asn Thr Asn Ala His Ser Ile Ile Tyr Arg Leu
385                 390                 395                 400

Arg Gly Arg Ala His Val Gln Val Val Asp Ser Asn Gly Asn Arg Val
                405                 410                 415

Tyr Asp Glu Glu Leu Gln Glu Gly His Val Leu Val Val Pro Gln Asn
            420                 425                 430

Phe Ala Val Ala Gly Lys Ser Gln Ser Glu Asn Phe Glu Tyr Val Ala
        435                 440                 445

Phe Lys Thr Asp Ser Arg Pro Ser Ile Ala Asn Leu Ala Gly Glu Asn
    450                 455                 460

Ser Val Ile Asp Asn Leu Pro Glu Glu Val Val Ala Asn Ser Tyr Gly
465                 470                 475                 480

Leu Gln Arg Glu Gln Ala Arg Gln Leu Lys Asn Asn Asn Pro Phe Lys
                485                 490                 495

Phe Phe Val Pro Pro Ser Gln Gln Ser Pro Arg Ala Val Ala
            500                 505                 510
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<210> 4
<211> 473
<212> PRT
<213> Glycine max

<400> 4

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Met Ala Ser Lys Val Val Ser Val Leu Val Ile Ala Met Met Leu Phe
  1               5                  10                  15

Ala Met Asn Cys Asn Cys Thr Ser Val Gly His Met Pro Ser Thr Lys
             20                  25                  30

Glu Glu Gly His Asp Phe Gln Glu Ser Lys Ala Lys Thr Thr Gln Thr
         35                  40                  45

Ala Asn Lys Ala Met Glu Thr Gly Lys Glu Gly Gln Glu Ala Ala Glu
     50                  55                  60

Ser Trp Thr Glu Trp Ala Lys Glu Lys Leu Ser Glu Gly Leu Gly Phe
 65                  70                  75                  80

Lys His Asp Gln Glu Ser Lys Glu Ser Thr Thr Asn Lys Val Ser Asp
                 85                  90                  95

Tyr Ala Thr Asp Thr Ala Gln Lys Ser Lys Asp Tyr Ala Thr Asp Thr
            100                 105                 110

Ala Gln Lys Ser Lys Asp Tyr Ala Gly Asp Ala Ala Gln Lys Ser Lys
        115                 120                 125

Asp Tyr Ala Gly Asp Ala Ala Gln Lys Thr Lys Asp Tyr Ala Ser Asp
    130                 135                 140

Thr Ala Gln Thr Ser Lys Asp Tyr Ala Gly Asp Ala Ala Gln Lys Ser
145                 150                 155                 160

Lys Gly Tyr Val Gly Asp Ala Ala Gln Lys Thr Lys Glu Tyr Val Gly
                165                 170                 175

Asp Ala Ala Gln Lys Thr Lys Asp Tyr Ala Thr Asp Ala Ala Gln Lys
            180                 185                 190

Thr Lys Asp Tyr Ala Thr Gln Lys Thr Lys Asp Tyr Ala Ser Asp Ala
        195                 200                 205

Thr Asp Ala Ala Lys Lys Thr Lys Asp Tyr Ala Ala Gln Lys Thr Lys
    210                 215                 220
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Asp Tyr Ala Ser Glu Ala Ser Asp Val Ala Gln Asn Thr Lys Asp Tyr
225 230 235 240

Ala Ala Gln Lys Thr Lys Asp Tyr Ala Ser Gly Gly Ala Gln Lys Thr
245 250 255

Lys Asp Tyr Ala Ser Gly Gly Ala Gln Lys Thr Lys Asp Tyr Ala Ser
260 265 270

Asp Ala Ala Gln Lys Thr Lys Asp Tyr Ala Ser Asp Gly Ala Gln Lys
275 280 285

Ser Lys Glu Tyr Ala Gly Asp Val Ala Leu Asn Ala Lys Asp Tyr Ala
290 295 300

Gln Lys Ser Lys Asp Tyr Ala Gly Asp Ala Ala Gln Asn Val Lys Asp
305 310 315 320

Tyr Ala Ser Asp Ala Val Gln Lys Arg Lys Glu Tyr Ser Gly Asp Ala
325 330 335

Ser His Lys Ser Lys Glu Ala Ser Asp Tyr Ala Ser Glu Thr Ala Lys
340 345 350

Lys Thr Lys Asp Tyr Val Gly Asp Ala Ala Gln Arg Ser Lys Gly Ala
355 360 365

Ala Glu Tyr Ala Ser Asp Ala Ala Gln Arg Thr Lys Glu Tyr Ala Gly
370 375 380

Asp Ala Thr Lys Arg Ser Lys Glu Ala Ser Asn Asp His Ala Asn Asp
385 390 395 400

Met Ala Gln Lys Thr Lys Asp Tyr Ala Ser Asp Thr Ala Gln Arg Thr
405 410 415

Lys Glu Lys Leu Gln Asp Ile Ala Ser Glu Ala Gly Gln Tyr Ser Ala
420 425 430

Glu Lys Ala Arg Glu Met Lys Asp Ala Ala Ala Glu Lys Ala Ser Asp
435 440 445

Ile Ala Lys Ala Ala Lys Gln Lys Ser Gln Glu Val Lys Glu Lys Leu
450 455 460

Gly Gly Gln His Arg Asp Ala Glu Leu
465 470

<210> 5
<211> 18
<212> PRT
<213> Glycine max

<220>
<221> VARIANT
<222> (1)
<223> At position 1, Xaa can be either Ser, Lys, His, or Gly

<220>
<221> VARIANT
<222> (2)
<223> At position 2, Xaa can be either Ile or Gly

<220>
<221> VARIANT
<222> (4)
<223> At position 4, Xaa can be either Glu, Asp, or Leu

<220>
<221> VARIANT
<222> (7)
<223> At position 7, Xaa can be any amino acid.

<220>
<221> VARIANT
<222> (8)
<223> At position 8, Xaa can be either Thr, Leu, Glu, Asn, Ala, Ser, or Pro

<220>
<221> VARIANT
<222> (9)
<223> At position 9, Xaa can be either Met, Leu, or Asn

<220>
<221> VARIANT
<222> (10)
<223> At position 10, Xaa can be either Lys or Arg

<220>
<221> VARIANT
<222> (11)
<223> At position 11, Xaa can be either Leu or Arg

<220>
<221> VARIANT
<222> (12)
<223> At position 12, Xaa can be any amino acid.

<220>
<221> VARIANT
<222> (13)
<223> At position 13, Xaa can be either Gln, Asn, Ala,
Leu, Ser, Arg, Pro, Ile, or His

<220>
<221> VARIANT
<222> (16)
<223> At position 16, Xaa can be any amino acid.

<400> 5
Xaa Xaa Asp Xaa Thr Ile Xaa Xaa Xaa Xaa Xaa Xaa Xaa Asn Ile Xaa
1 5 10 15

Gln Thr

<210> 6
<211> 21
<212> PRT
<213> Glycine max

<220>
<221> VARIANT
<222> (2)
<223> At position 2, Xaa can be either Val or Ile

<220>
<221> VARIANT
<222> (3)
<223> At position 3, Xaa can be either Asp or Glu

<220>
<221> VARIANT
<222> (5)
<223> At position 5, Xaa can be either Asn or Thr

<220>
<221> VARIANT
<222> (9)
<223> At position 9, Xaa can be either Leu or Met

<220>
<221> VARIANT
<222> (11)
<223> At position 11, Xaa can be either Arg or Leu

<220>
<221> VARIANT
<222> (12)
<223> At position 12, Xaa can be either Arg, Asn, or Ala

<220>
<221> VARIANT
<222> (13)
<223> At position 13, Xaa can be either Ala or Gln

<220>
<221> VARIANT
<222> (16)
<223> At position 16, Xaa can be either Ala or Gly

<220>
<221> VARIANT
<222> (18)
<223> At position 18, Xaa can be either Asn or Thr

<220>
<221> VARIANT
<222> (20)
<223> At position 20, Xaa can be any amino acid

<220>
<221> VARIANT
<222> (21)
<223> At position 21, Xaa can be either Pro, Gly, Ala,
or Val

<220>
<221> VARIANT
<222> (19)
<223> At position 19, Xaa can be either Thr, Pro, Leu,
Ala, Asn, Ser

<400> 6
Gly Xaa Xaa Glu Xaa Ile Ala Thr Xaa Arg Xaa Xaa Xaa Asn Ile Xaa
1 5 10 15

Gln Xaa Xaa Xaa Xaa

<210> 7
<211> 25
<212> PRT
<213> Glycine max

<220>
<221> VARIANT
<222> (2)
<223> At position 2, Xaa can be either Ile, Val, Leu, or Phe

<220>
<221> VARIANT
<222> (3)
<223> At position 3, Xaa can be either Asp or Glu

<220>
<221> VARIANT
<222> (4)
<223> At position 4, Xaa can be either Glu or Leu

<220>
<221> VARIANT
<222> (5)
<223> At position 5, Xaa can be either Asn or Thr

<220>
<221> VARIANT
<222> (8)
<223> At position 8, Xaa can be either Gln or Thr

<220>
<221> VARIANT
<222> (9)
<223> At position 9, Xaa can be either Met, Leu, Asn, or Pro

<220>
<221> VARIANT
<222> (10)
<223> At position 10, Xaa can be either Arg or Pro

<220>
<221> VARIANT
<222> (11)

<223> At position 11, Xaa can be either Leu, Arg, or Ala

<220>
<221> VARIANT
<222> (12)
<223> At position 12, Xaa can be either Arg or Ala

<220>
<221> VARIANT
<222> (13)
<223> At position 13, Xaa can be either Gln, Asp, Asn,
or Arg

<220>
<221> VARIANT
<222> (15)
<223> At position 15, Xaa can be either Ser or Ile

<220>
<221> VARIANT
<222> (18)
<223> At position 18, Xaa can be either Asn, Gln, Pro,
Leu, Thr, Ala, or Asp

<220>
<221> VARIANT
<222> (20)
<223> At position 20, Xaa can be either Ser, Ala, or Gly

<220>
<221> VARIANT
<222> (21)
<223> At position 21, Xaa can be either any amino acid

<220>
<221> VARIANT
<222> (22)
<223> At position 22, Xaa can be Asp, Asn, or Pro

<220>
<221> VARIANT
<222> (23)
<223> At position 23, Xaa can be either Ile, Asp, Asn,
Ala, Val, or Phe

<220>
<221> VARIANT
<222> (25)

<223> At position 25, Xaa can be either Asn, Ala, or Leu

<220>
<221> VARIANT
<222> (16)
<223> At position 16, Xaa can be either Ala or Gly

<400> 7
Gly Xaa Xaa Xaa Xaa Ile Ala Xaa Xaa Xaa Xaa Xaa Xaa Asn Xaa Xaa
1 5 10 15

Gln Xaa Ser Xaa Xaa Xaa Xaa Tyr Xaa
20 25

<210> 8
<211> 484
<212> PRT
<213> Glycine max

<400> 8
Met Ala Lys Leu Val Leu Ser Leu Cys Phe Leu Leu Phe Ser Gly Cys
1 5 10 15

Phe Ala Leu Arg Glu Gln Ala Gln Gln Asn Glu Cys Gln Ile Gln Lys
20 25 30

Leu Asn Ala Leu Lys Pro Asp Asn Arg Ile Glu Ser Glu Gly Gly Phe
35 40 45

Ile Glu Thr Trp Asn Pro Asn Asn Lys Pro Phe Gln Cys Ala Gly Val
50 55 60

Ala Leu Ser Arg Cys Thr Leu Asn Arg Asn Ala Leu Arg Arg Pro Ser
65 70 75 80

Tyr Thr Asn Gly Pro Gln Glu Ile Tyr Ile Gln Gln Gly Asn Gly Ile
85 90 95

Phe Gly Met Ile Phe Pro Gly Cys Pro Ser Thr Tyr Gln Glu Pro Gln
100 105 110

Glu Ser Gln Gln Arg Gly Arg Ser Gln Arg Pro Gln Asp Arg His Gln
115 120 125

Lys Val His Arg Phe Arg Glu Gly Asp Leu Ile Ala Val Pro Thr Gly
130 135 140

```
Val Ala Trp Trp Met Tyr Asn Asn Glu Asp Thr Pro Val Val Ala Val
145                 150                 155                 160

Ser Ile Ile Asp Thr Asn Ser Leu Glu Asn Gln Leu Asp Gln Met Pro
                165                 170                 175

Arg Arg Phe Tyr Leu Ala Gly Asn Gln Glu Gln Glu Phe Leu Lys Tyr
            180                 185                 190

Gln Gln Gln Gln Gln Gly Gly Ser Gln Ser Gln Lys Gly Lys Gln Gln
        195                 200                 205

Glu Glu Glu Asn Glu Gly Ser Asn Ile Leu Ser Gly Phe Ala Pro Glu
    210                 215                 220

Phe Leu Lys Glu Ala Phe Gly Val Asn Met Gln Ile Val Arg Asn Leu
225                 230                 235                 240

Gln Gly Glu Asn Glu Glu Glu Asp Ser Gly Ala Ile Val Thr Val Lys
                245                 250                 255

Gly Gly Leu Arg Val Thr Ala Pro Ala Met Arg Lys Pro Gln Gln Glu
            260                 265                 270

Glu Asp Asp Asp Asp Glu Glu Glu Gln Pro Gln Cys Val Glu Thr Asp
        275                 280                 285

Lys Gly Cys Gln Arg Gln Ser Lys Arg Ser Arg Asn Gly Ile Asp Glu
    290                 295                 300

Thr Ile Cys Thr Met Arg Leu Arg Gln Asn Ile Gly Gln Asn Ser Ser
305                 310                 315                 320

Pro Asp Ile Tyr Asn Pro Gln Ala Gly Ser Ile Thr Thr Ala Thr Ser
                325                 330                 335

Leu Asp Phe Pro Ala Leu Trp Leu Leu Lys Leu Ser Ala Gln Tyr Gly
            340                 345                 350

Ser Leu Arg Lys Asn Ala Met Phe Val Pro His Tyr Thr Leu Asn Ala
        355                 360                 365

Asn Ser Ile Ile Tyr Ala Leu Asn Gly Arg Ala Leu Val Gln Val Val
    370                 375                 380

Asn Cys Asn Gly Glu Arg Val Phe Asp Gly Glu Leu Gln Glu Gly Gly
385                 390                 395                 400
```

```
Val Leu Ile Val Pro Gln Asn Phe Ala Val Ala Ala Lys Ser Gln Ser
                405                 410                 415

Asp Asn Phe Glu Tyr Val Ser Phe Lys Thr Asn Asp Arg Pro Ser Ile
            420                 425                 430

Gly Asn Leu Ala Gly Ala Asn Ser Leu Leu Asn Ala Leu Pro Glu Glu
        435                 440                 445

Val Ile Gln His Thr Phe Asn Leu Lys Ser Gln Gln Ala Arg Gln Val
    450                 455                 460

Lys Asn Asn Asn Pro Phe Ser Phe Leu Val Pro Pro Gln Glu Ser Gln
465                 470                 475                 480

Arg Ala Val Ala
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<210> 9
<211> 485
<212> PRT
<213> Glycine max

<400> 9

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Met Ala Lys Leu Val Leu Ser Leu Cys Phe Leu Leu Phe Ser Gly Cys
  1               5                  10                  15

Phe Ala Leu Arg Glu Gln Ala Gln Gln Asn Glu Cys Gln Ile Gln Lys
            20                  25                  30

Leu Asn Ala Leu Lys Pro Asp Asn Arg Ile Glu Ser Glu Gly Gly Phe
        35                  40                  45

Ile Glu Thr Trp Asn Pro Asn Asn Lys Pro Phe Gln Cys Ala Gly Val
    50                  55                  60

Ala Leu Ser Arg Cys Thr Leu Asn Arg Asn Ala Leu Arg Arg Pro Ser
65                  70                  75                  80

Tyr Thr Asn Gly Pro Gln Glu Ile Tyr Ile Gln Gln Gly Asn Gly Ile
                85                  90                  95

Phe Gly Met Ile Phe Pro Gly Cys Pro Ser Thr Tyr Gln Glu Pro Gln
            100                 105                 110

Glu Ser Gln Gln Arg Gly Arg Ser Gln Arg Pro Gln Asp Arg His Gln
        115                 120                 125
```

Lys Val His Arg Phe Arg Glu Gly Asp Leu Ile Ala Val Pro Thr Gly
130 135 140

Val Ala Trp Trp Met Tyr Asn Asn Glu Asp Thr Pro Val Val Ala Val
145 150 155 160

Ser Ile Ile Asp Thr Asn Ser Leu Glu Asn Gln Leu Asp Gln Met Pro
165 170 175

Arg Arg Phe Tyr Leu Ala Gly Asn Gln Glu Gln Glu Phe Leu Lys Tyr
180 185 190

Gln Gln Gln Gln Gln Gly Gly Ser Gln Ser Gln Lys Gly Lys Gln Gln
195 200 205

Glu Glu Glu Asn Glu Gly Ser Asn Ile Leu Ser Gly Phe Ala Pro Glu
210 215 220

Phe Leu Lys Glu Ala Phe Gly Val Asn Met Gln Ile Val Arg Asn Leu
225 230 235 240

Gln Gly Glu Asn Glu Glu Glu Asp Ser Gly Ala Ile Val Thr Val Lys
245 250 255

Gly Gly Leu Arg Val Thr Ala Pro Ala Met Arg Lys Pro Gln Gln Glu
260 265 270

Glu Asp Asp Asp Asp Glu Glu Glu Gln Pro Gln Cys Val Glu Thr Asp
275 280 285

Lys Gly Cys Gln Arg Gln Ser Lys Arg Ser Arg Asn Gly Ile Asp Glu
290 295 300

Thr Ile Cys Thr Met Arg Leu Arg Gln Asn Ile Gly Gln Asn Ser Ser
305 310 315 320

Pro Asp Ile Tyr Asn Pro Gln Ala Gly Ser Ile Thr Thr Ala Thr Ser
325 330 335

Leu Asp Phe Pro Ala Leu Trp Leu Leu Lys Leu Ser Ala Gln Tyr Gly
340 345 350

Ser Leu Arg Lys Asn Ala Met Phe Val Pro His Tyr Thr Leu Asn Ala
355 360 365

Asn Ser Ile Ile Tyr Ala Leu Asn Gly Arg Ala Leu Val Gln Val Val
370 375 380

```
Asn Cys Asn Gly Glu Arg Val Phe Asp Gly Glu Leu Gln Glu Gly Gly
385                 390                 395                 400

Val Leu Ile Val Pro Gln Asn Phe Ala Val Ala Ala Lys Ser Gln Ser
                405                 410                 415

Asp Asn Phe Glu Tyr Val Ser Phe Lys Thr Asn Asp Arg Pro Ser Ile
            420                 425                 430

Gly Asn Leu Ala Gly Ala Asn Ser Leu Leu Asn Ala Leu Pro Glu Glu
        435                 440                 445

Val Ile Gln His Thr Phe Asn Leu Lys Ser Gln Gln Ala Arg Gln Val
    450                 455                 460

Lys Asn Asn Asn Pro Phe Ser Phe Leu Val Pro Pro Gln Glu Ser Gln
465                 470                 475                 480

Arg Arg Ala Val Ala
                485
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<210> 10
<211> 185
<212> PRT
<213> Arachis hypogaea

<220>
<221> UNSURE
<222> (100)
<223> Amino acid at postion 100 is uncertain

<400> 10

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Gly Ile Glu Glu Thr Ile Cys Thr Ala Ser Ala Lys Lys Asn Ile Gly
  1               5                  10                  15

Arg Asn Arg Ser Pro Asp Ile Tyr Asn Pro Gln Ala Gly Ser Leu Lys
            20                  25                  30

Thr Ala Asn Asp Leu Asn Leu Leu Ile Leu Arg Trp Leu Gly Leu Ser
        35                  40                  45

Ala Glu Tyr Gly Asn Leu Tyr Arg Asn Ala Leu Phe Val Ala His Tyr
    50                  55                  60

Asn Thr Asn Ala His Ser Ile Ile Tyr Arg Leu Arg Gly Arg Ala His
65                  70                  75                  80
```

```
Val Gln Val Val Asp Ser Asn Gly Asn Arg Val Tyr Asp Glu Glu Leu
                 85                  90                  95

Gln Glu Phe Xaa Val Leu Val Val Pro Gln Asn Phe Ala Val Ala Gly
            100                 105                 110

Lys Ser Gln Ser Glu Asn Phe Glu Tyr Val Ala Phe Lys Thr Asp Ser
        115                 120                 125

Arg Pro Ser Ile Ala Asn Leu Ala Gly Glu Asn Ser Val Ile Asp Asn
    130                 135                 140

Leu Pro Glu Glu Val Val Ala Asn Ser Tyr Gly Leu Gln Arg Glu Gln
145                 150                 155                 160

Ala Arg Gln Leu Lys Asn Asn Asn Pro Phe Lys Phe Phe Val Pro Pro
                165                 170                 175

Ser Gln Gln Ser Pro Arg Ala Val Ala
            180                 185
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<210> 11
<211> 46
<212> PRT
<213> Glycine max

<400> 11
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Asn Gln Leu Asp Gln Met Pro Arg Arg Phe Tyr Leu Ala Gly Asn Gln
  1               5                  10                  15

Glu Gln Glu Phe Leu Lys Tyr Gln Gln Gln Gln Gly Gly Ser Gln
             20                  25                  30

Ser Gln Lys Gly Lys Gln Gln Glu Glu Glu Asn Glu Gly Ser
         35                  40                  45
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<210> 12
<211> 156
<212> PRT
<213> Arachis hypogaea

<400> 12
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Leu Thr Ile Leu Val Ala Leu Ala Leu Phe Leu Leu Ala Ala His Ala
  1               5                  10                  15
```

Ser Ala Arg Gln Gln Trp Glu Leu Gln Gly Asp Arg Arg Cys Gln Ser
20 25 30

Gln Leu Glu Arg Ala Asn Leu Arg Pro Cys Glu Gln His Leu Met Gln
35 40 45

Lys Ile Gln Arg Asp Glu Asp Ser Tyr Glu Arg Asp Pro Tyr Ser Pro
50 55 60

Ser Gln Asp Pro Tyr Ser Pro Ser Pro Tyr Asp Arg Arg Gly Ala Gly
65 70 75 80

Ser Ser Gln His Gln Glu Arg Cys Cys Asn Glu Leu Asn Glu Phe Glu
85 90 95

Asn Asn Gln Arg Cys Met Cys Glu Ala Leu Gln Gln Ile Met Glu Asn
100 105 110

Gln Ser Asp Arg Leu Gln Gly Arg Gln Gln Glu Gln Gln Phe Lys Arg
115 120 125

Glu Leu Arg Asn Leu Pro Gln Gln Cys Gly Leu Arg Ala Pro Gln Arg
130 135 140

Cys Asp Leu Asp Val Glu Ser Gly Gly Arg Asp Tyr
145 150 155

<210> 13
<211> 166
<212> PRT
<213> Arachis hypogaea

<400> 13
Met Ala Ser Met Thr Gly Gly Gln Met Gly Arg Asp Pro Asn Ser Ala
1 5 10 15

Arg Gln Gln Trp Glu Leu Gln Gly Asp Arg Arg Cys Gln Ser Gln Leu
20 25 30

Glu Arg Ala Asn Leu Arg Pro Cys Glu Gln His Leu Met Gln Lys Ile
35 40 45

Gln Arg Asp Glu Asp Ser Tyr Glu Arg Asp Pro Tyr Ser Pro Ser Gln
50 55 60

Asp Pro Tyr Ser Pro Ser Pro Tyr Asp Arg Arg Gly Ala Gly Ser Ser
65 70 75 80

```
Gln His Gln Glu Arg Cys Cys Asn Glu Leu Asn Glu Phe Glu Asn Asn
                  85                  90                  95

Gln Arg Cys Met Cys Glu Ala Leu Gln Gln Ile Met Glu Asn Gln Ser
            100                 105                 110

Asp Arg Leu Gln Gly Arg Gln Gln Glu Gln Gln Phe Lys Arg Glu Leu
        115                 120                 125

Arg Asn Leu Pro Gln Gln Cys Gly Leu Arg Ala Pro Gln Arg Cys Asp
    130                 135                 140

Leu Asp Val Glu Ser Gly Gly Arg Asp Arg Tyr Ala Ala Ala Leu Glu
145                 150                 155                 160

His His His His His His
                  165
```